

Linear Motors

ILM+ DATA SHEETS

ETEL

MOTOR PERFORMANCE		Winding codes	RA	RA	UA	UA
		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	503	503	478	478
Fc	Continuous force	N	89.0	107	85.2	103
Fs	Standstill force	N	67.2	80.4	64.3	77.0
Ip	Peak current	Arms	17.8	17.8	36.7	36.7
Ic	Continuous current	Arms	3.09	3.71	6.41	7.70
Is	Standstill current	Arms	2.33	2.79	4.84	5.78
vs	Rated low speed	mm/s	0.92	2.5	0.95	2.6
Pc	Power dissipation @ Ic	W	79.4	112	78.5	111
Fd	Max. detent force (average to peak)	N	0.0	0.0	0.0	0.0
Fa	Attraction force	N	0.00	0.00	0.00	0.00

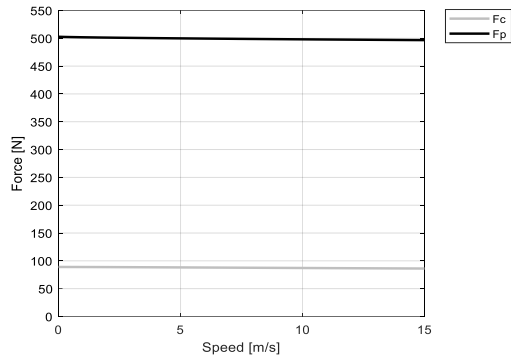
MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	29.6	29.6	13.7	13.7
Ku	Back EMF constant (*)	Vrms/(m/s)	17.8	17.8	8.23	8.23
Km	Motor constant	N/√W	12.2	12.2	11.8	11.8
R20	Electrical resistance at 20°C (*)	Ohm	3.90	3.90	0.900	0.900
L	Electrical inductance (*)	mH	7.40	7.41	1.58	1.58
rth	Thermal time constant	s	698	252	674	245
Rth	Thermal resistance	K/W	1.38	0.970	1.40	0.979
2tp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	13.3	13.3	13.3	13.3
mm	Motor mass	kg	0.385	0.539	0.373	0.527

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.07	0.07	0.07	0.07
x	Assumed stroke	m	0.38	0.38	0.38	0.38
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	33	N/A	33
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.3	N/A	0.3

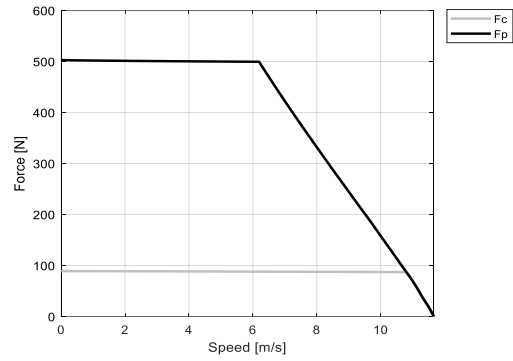
Notes: (*) terminal to terminal.
Hypotheses and tolerances are in ETEL Integration Manual.

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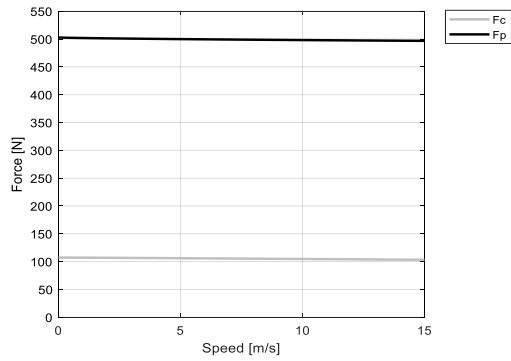
RA - FREE AIR COOLING - 600V



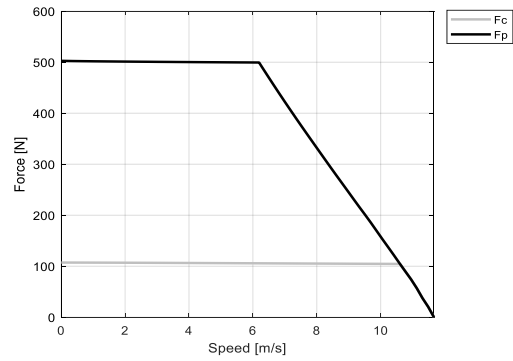
RA - FREE AIR COOLING - 300V



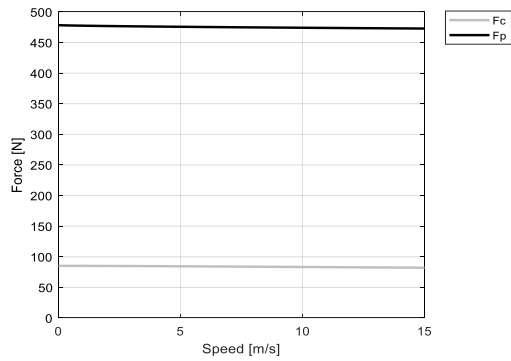
RA - FORCED AIR COOLING - 600V



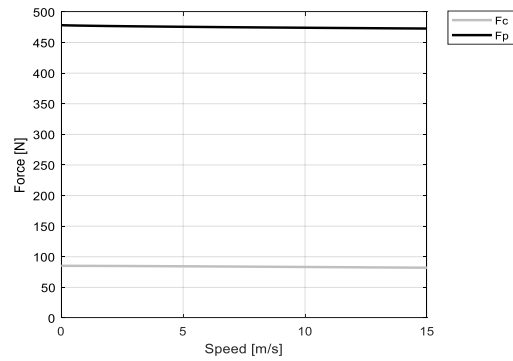
RA - FORCED AIR COOLING - 300V



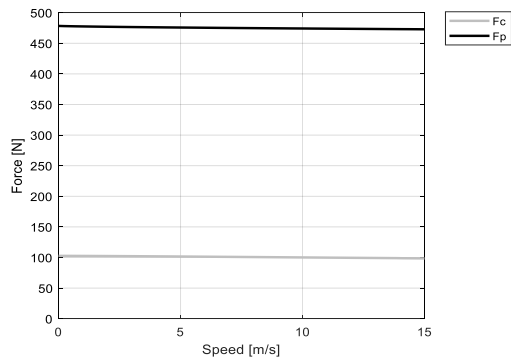
UA - FREE AIR COOLING - 600V



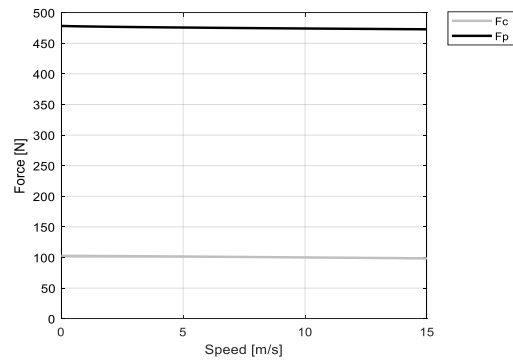
UA - FREE AIR COOLING - 300V



UA - FORCED AIR COOLING - 600V



UA - FORCED AIR COOLING - 300V



MOTOR PERFORMANCE		Winding codes	RA	RA	UA	UA
		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	801	801	762	762
Fc	Continuous force	N	131	162	125	155
Fs	Standstill force	N	98.7	121	94.5	116
Ip	Peak current	Arms	17.8	17.8	36.6	36.6
Ic	Continuous current	Arms	2.85	3.52	5.91	7.30
Is	Standstill current	Arms	2.15	2.64	4.46	5.47
vs	Rated low speed	mm/s	0.88	2.6	0.91	2.7
Pc	Power dissipation @ Ic	W	92.1	137	91.3	136
Fd	Max. detent force (average to peak)	N	0.0	0.0	0.0	0.0
Fa	Attraction force	N	0.00	0.00	0.00	0.00

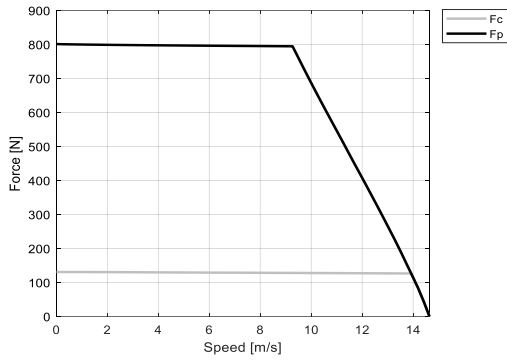
MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	47.3	47.3	21.8	21.8
Ku	Back EMF constant (*)	Vrms/(m/s)	28.4	28.4	13.1	13.1
Km	Motor constant	N/√W	16.7	16.7	16.1	16.1
R20	Electrical resistance at 20°C (*)	Ohm	5.34	5.34	1.23	1.23
L	Electrical inductance (*)	mH	12.0	12.0	2.55	2.56
rth	Thermal time constant	s	731	246	705	239
Rth	Thermal resistance	K/W	1.19	0.791	1.20	0.798
2tp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	22.7	22.7	22.7	22.7
mm	Motor mass	kg	0.509	0.662	0.491	0.645

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.08	0.08	0.08	0.08
x	Assumed stroke	m	0.38	0.38	0.38	0.38
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	33	N/A	33
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.3	N/A	0.3

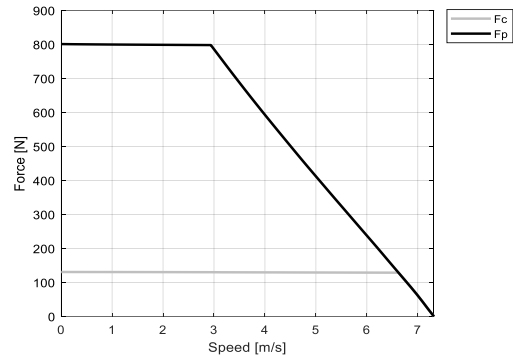
Notes: (*) terminal to terminal.
Hypotheses and tolerances are in ETEL Integration Manual.

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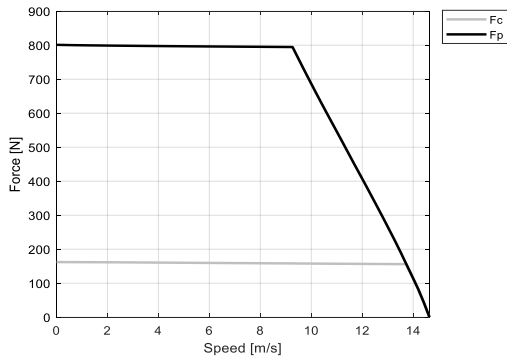
RA - FREE AIR COOLING - 600V



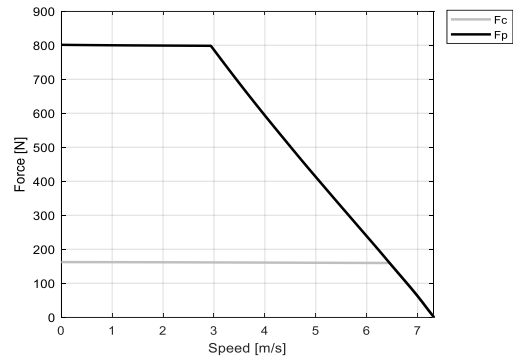
RA - FREE AIR COOLING - 300V



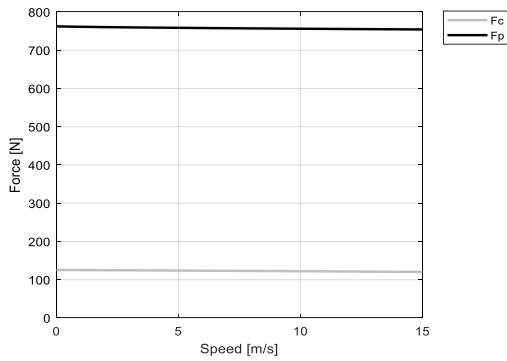
RA - FORCED AIR COOLING - 600V



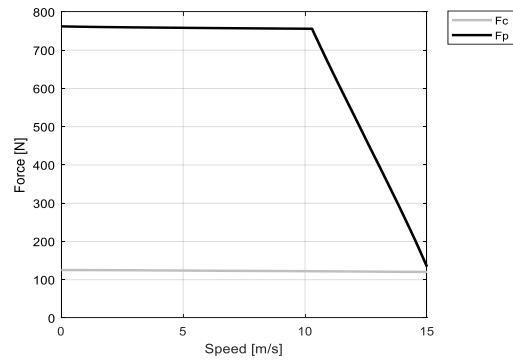
RA - FORCED AIR COOLING - 300V



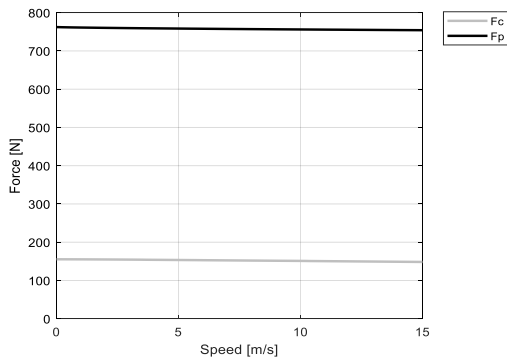
UA - FREE AIR COOLING - 600V



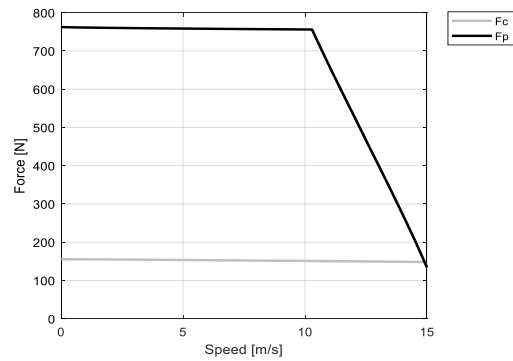
UA - FREE AIR COOLING - 300V



UA - FORCED AIR COOLING - 600V



UA - FORCED AIR COOLING - 300V



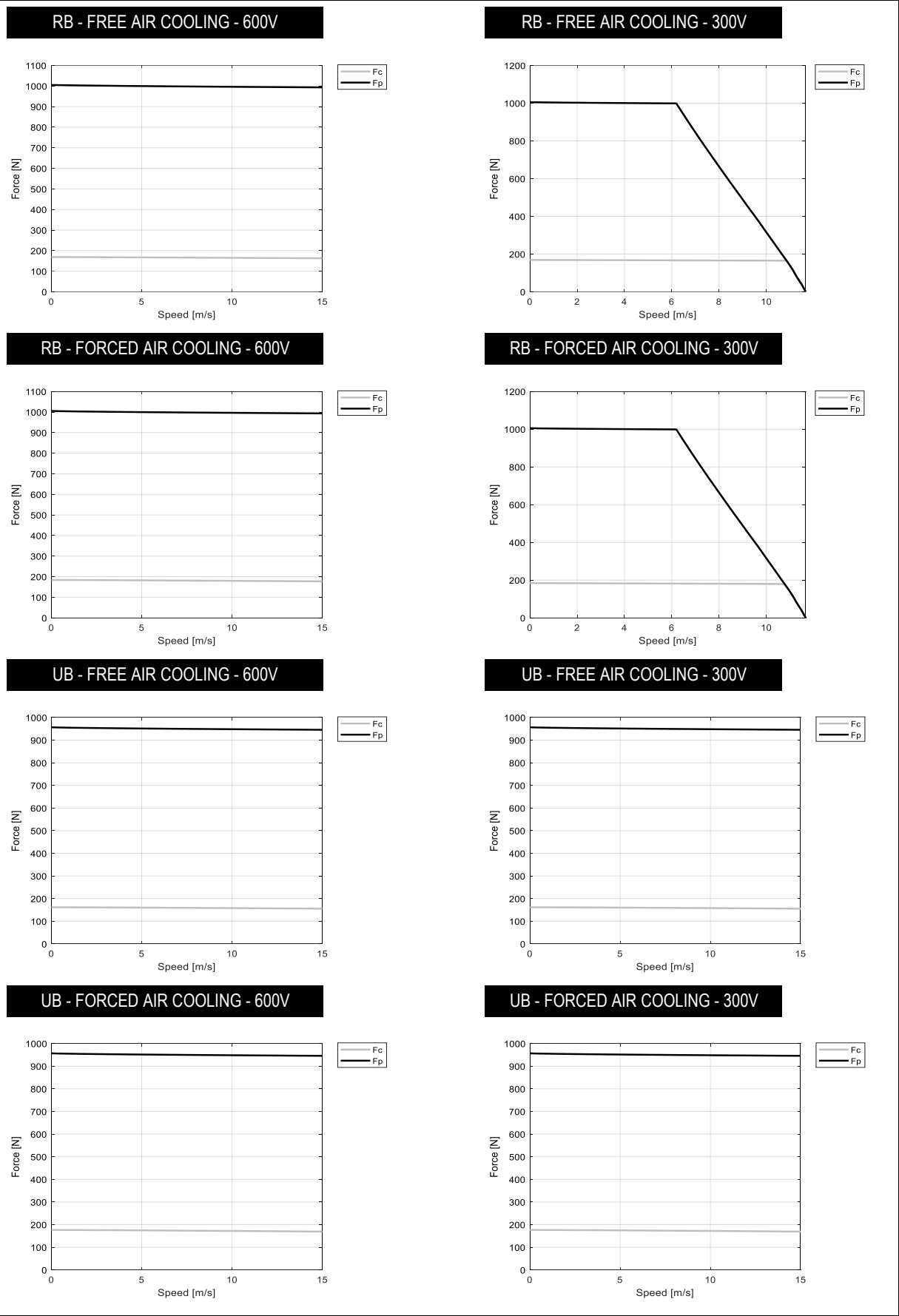
MOTOR PERFORMANCE		Winding codes	RB	RB	UB	UB
		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	1010	1010	957	957
Fc	Continuous force	N	169	184	162	177
Fs	Standstill force	N	128	139	122	133
Ip	Peak current	Arms	35.7	35.7	73.4	73.4
Ic	Continuous current	Arms	5.89	6.41	12.2	13.3
Is	Standstill current	Arms	4.46	4.83	9.24	10.0
vs	Rated low speed	mm/s	0.70	1.3	0.72	1.4
Pc	Power dissipation @ Ic	W	145	169	143	168
Fd	Max. detent force (average to peak)	N	0.0	0.0	0.0	0.0
Fa	Attraction force	N	0.00	0.00	0.00	0.00

MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	29.6	29.6	13.7	13.7
Ku	Back EMF constant (*)	Vrms/(m/s)	17.8	17.8	8.23	8.23
Km	Motor constant	N/√W	17.3	17.3	16.6	16.6
R20	Electrical resistance at 20°C (*)	Ohm	1.95	1.95	0.450	0.450
L	Electrical inductance (*)	mH	3.70	3.70	0.789	0.790
rth	Thermal time constant	s	911	477	884	460
Rth	Thermal resistance	K/W	0.759	0.646	0.766	0.650
2tp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	13.3	13.3	13.3	13.3
mm	Motor mass	kg	0.762	1.06	0.738	1.04

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.13	0.13	0.13	0.13
x	Assumed stroke	m	0.63	0.63	0.63	0.63
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	33	N/A	33
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.3	N/A	0.3

Notes: (*) terminal to terminal.
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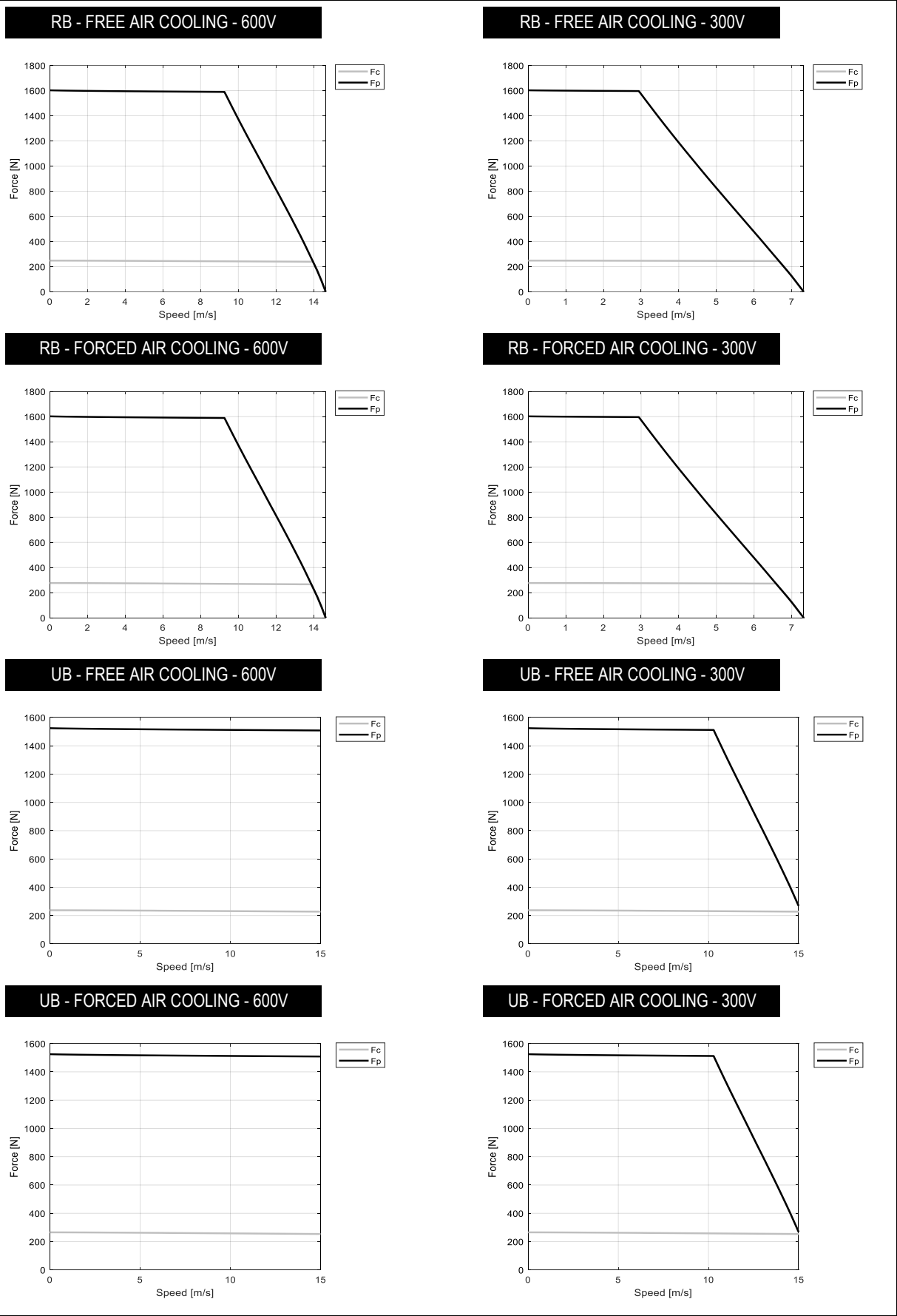
MOTOR PERFORMANCE		Winding codes	RB	RB	UB	UB
		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	1600	1600	1520	1520
Fc	Continuous force	N	248	277	238	266
Fs	Standstill force	N	187	208	180	200
Ip	Peak current	Arms	35.5	35.5	73.2	73.2
Ic	Continuous current	Arms	5.43	6.05	11.3	12.6
Is	Standstill current	Arms	4.10	4.55	8.51	9.45
vs	Rated low speed	mm/s	0.67	1.4	0.69	1.5
Pc	Power dissipation @ Ic	W	168	206	167	204
Fd	Max. detent force (average to peak)	N	0.0	0.0	0.0	0.0
Fa	Attraction force	N	0.00	0.00	0.00	0.00

MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	47.3	47.3	21.8	21.8
Ku	Back EMF constant (*)	Vrms/(m/s)	28.4	28.4	13.1	13.1
Km	Motor constant	N/√W	23.6	23.6	22.7	22.7
R20	Electrical resistance at 20°C (*)	Ohm	2.67	2.67	0.616	0.616
L	Electrical inductance (*)	mH	5.98	5.99	1.28	1.28
rth	Thermal time constant	s	955	451	925	435
Rth	Thermal resistance	K/W	0.654	0.531	0.659	0.535
2tp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	22.7	22.7	22.7	22.7
mm	Motor mass	kg	1.01	1.31	0.972	1.27

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.16	0.16	0.16	0.16
x	Assumed stroke	m	0.63	0.63	0.63	0.63
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	33	N/A	33
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.3	N/A	0.3

Notes: (*) terminal to terminal.
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MOTOR PERFORMANCE		Winding codes	RC	RC	UC	UC
		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	1510	1510	1440	1440
Fc	Continuous force	N	240	257	230	245
Fs	Standstill force	N	182	194	174	186
Ip	Peak current	Arms	53.5	53.5	110	110
Ic	Continuous current	Arms	8.40	8.99	17.4	18.5
Is	Standstill current	Arms	6.36	6.78	13.2	14.1
vs	Rated low speed	mm/s	0.52	0.99	0.54	1.0
Pc	Power dissipation @ Ic	W	196	223	195	217
Fd	Max. detent force (average to peak)	N	0.0	0.0	0.0	0.0
Fa	Attraction force	N	0.00	0.00	0.00	0.00

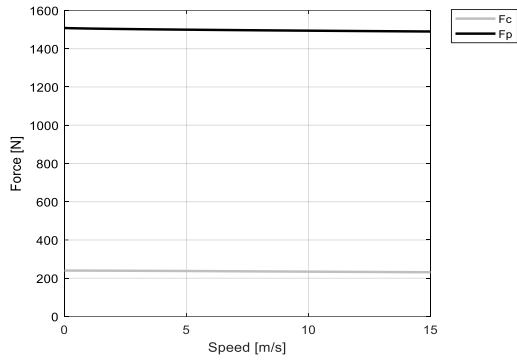
MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	29.6	29.6	13.7	13.7
Ku	Back EMF constant (*)	Vrms/(m/s)	17.8	17.8	8.23	8.23
Km	Motor constant	N/√W	21.2	21.2	20.4	20.4
R20	Electrical resistance at 20°C (*)	Ohm	1.30	1.30	0.300	0.300
L	Electrical inductance (*)	mH	2.46	2.47	0.526	0.526
rth	Thermal time constant	s	1220	648	1200	626
Rth	Thermal resistance	K/W	0.559	0.491	0.564	0.495
2tp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	13.3	13.3	13.3	13.3
mm	Motor mass	kg	1.14	1.59	1.10	1.55

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.19	0.19	0.19	0.19
x	Assumed stroke	m	0.89	0.89	0.89	0.89
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	66	N/A	66
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.9	N/A	0.9

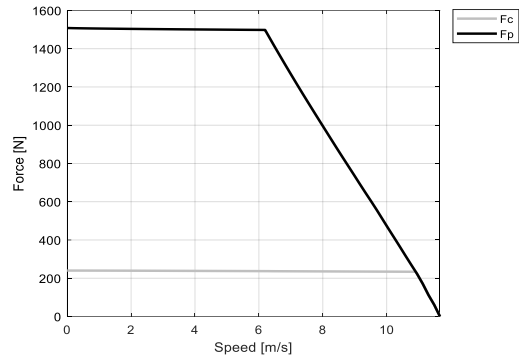
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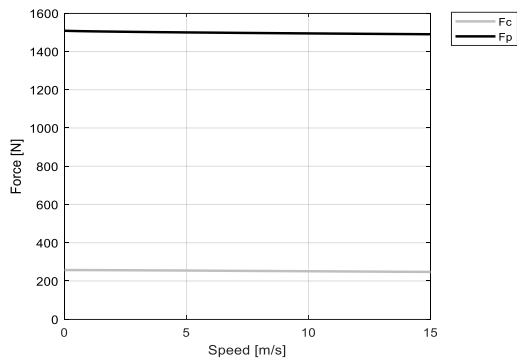
RC - FREE AIR COOLING - 600V



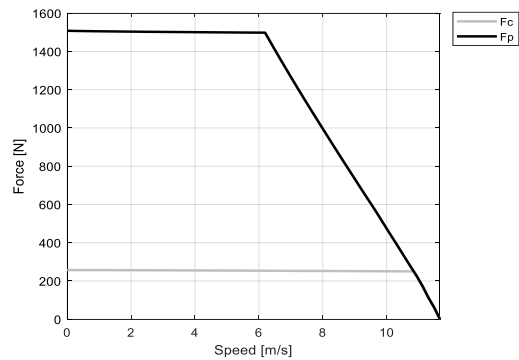
RC - FREE AIR COOLING - 300V



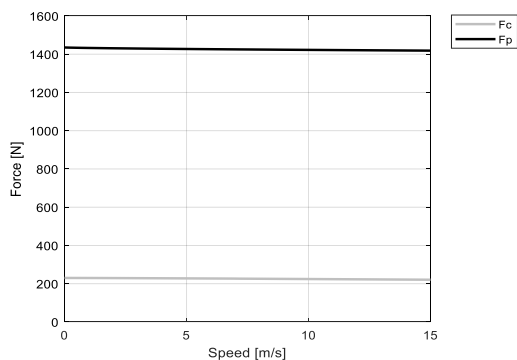
RC - FORCED AIR COOLING - 600V



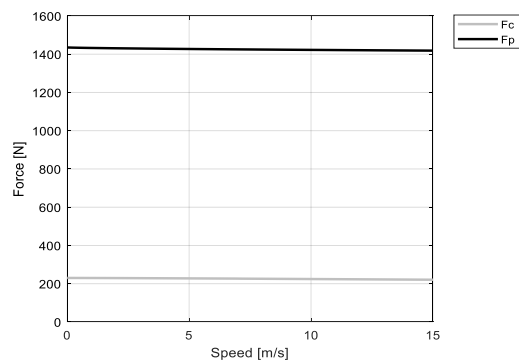
RC - FORCED AIR COOLING - 300V



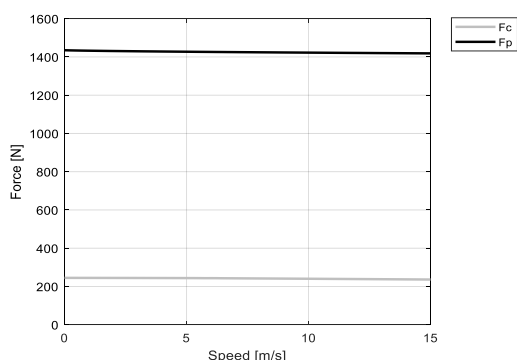
UC - FREE AIR COOLING - 600V



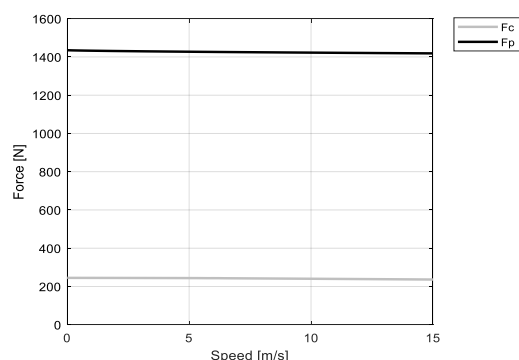
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UC - FORCED AIR COOLING - 600V



UC - FORCED AIR COOLING - 300V



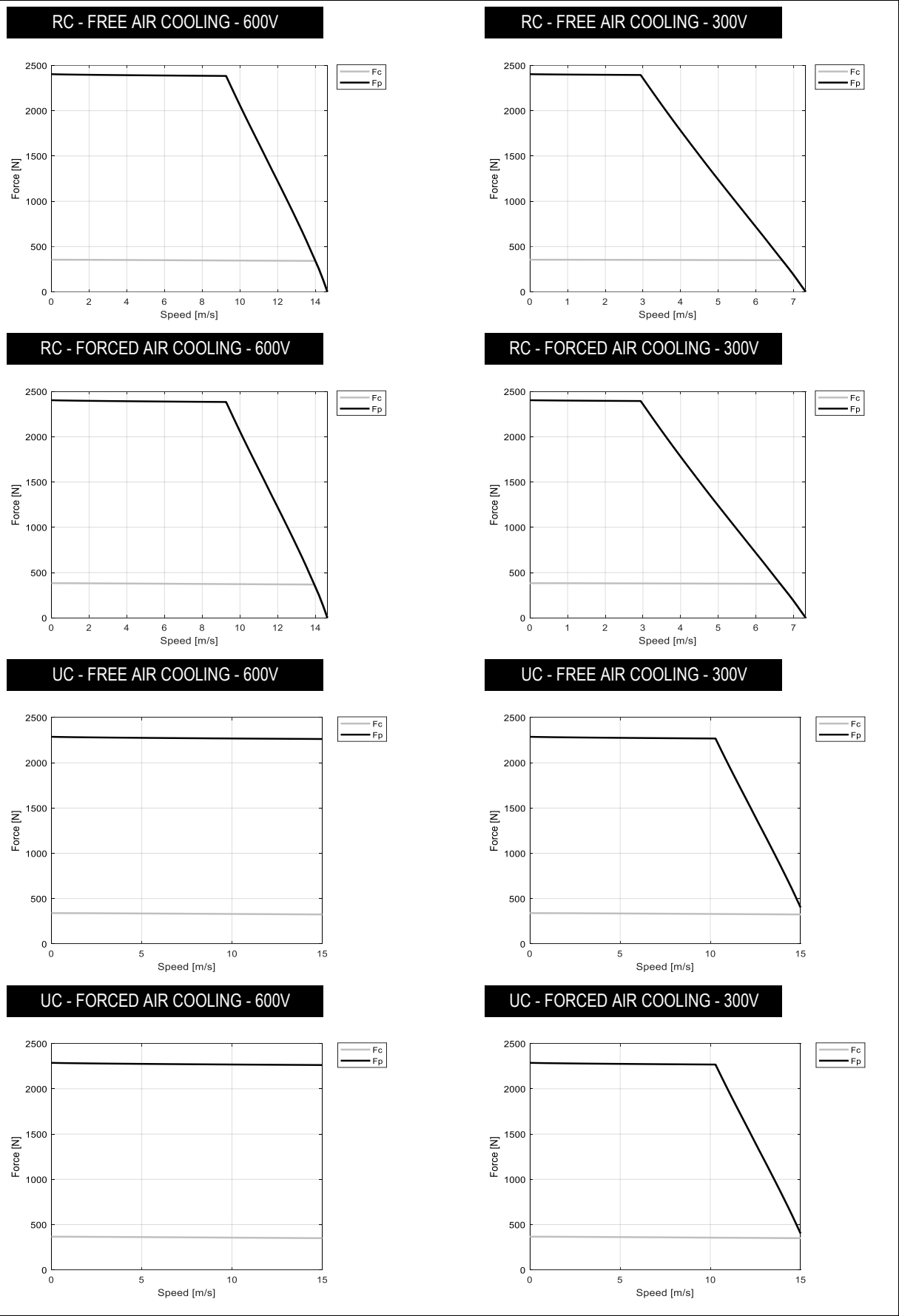
MOTOR PERFORMANCE		Winding codes	RC	RC	UC	UC
		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	2400	2400	2290	2290
Fc	Continuous force	N	354	383	340	367
Fs	Standstill force	N	268	289	257	277
Ip	Peak current	Arms	53.3	53.3	110	110
Ic	Continuous current	Arms	7.78	8.39	16.1	17.4
Is	Standstill current	Arms	5.88	6.33	12.2	13.1
vs	Rated low speed	mm/s	0.50	0.98	0.51	1.0
Pc	Power dissipation @ Ic	W	230	265	229	264
Fd	Max. detent force (average to peak)	N	0.0	0.0	0.0	0.0
Fa	Attraction force	N	0.00	0.00	0.00	0.00

MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	47.3	47.3	21.8	21.8
Ku	Back EMF constant (*)	Vrms/(m/s)	28.4	28.4	13.1	13.1
Km	Motor constant	N/√W	28.9	28.9	27.8	27.8
R20	Electrical resistance at 20°C (*)	Ohm	1.78	1.78	0.411	0.411
L	Electrical inductance (*)	mH	3.99	3.99	0.851	0.852
rth	Thermal time constant	s	1290	653	1260	629
Rth	Thermal resistance	K/W	0.477	0.413	0.480	0.415
2tp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	22.7	22.7	22.7	22.7
mm	Motor mass	kg	1.50	1.95	1.45	1.90

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.24	0.24	0.24	0.24
x	Assumed stroke	m	0.89	0.89	0.89	0.89
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	66	N/A	66
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.9	N/A	0.9

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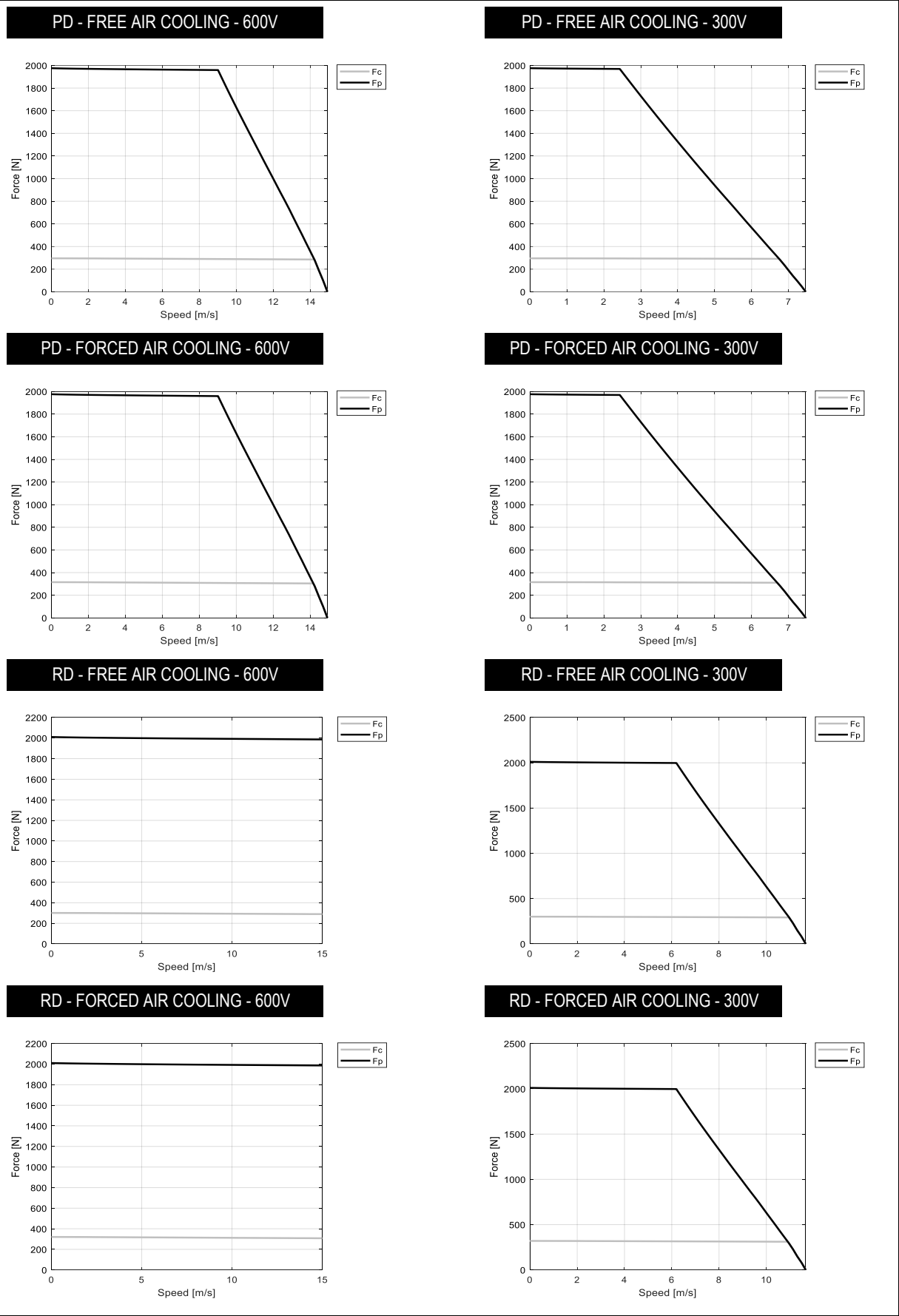
MOTOR PERFORMANCE		Winding codes	PD	PD	RD	RD
		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	1980	1980	2010	2010
Fc	Continuous force	N	296	315	300	320
Fs	Standstill force	N	224	238	227	242
Ip	Peak current	Arms	44.8	44.8	71.3	71.3
Ic	Continuous current	Arms	6.64	7.07	10.5	11.2
Is	Standstill current	Arms	5.03	5.34	7.98	8.48
vs	Rated low speed	mm/s	0.38	0.69	0.38	0.68
Pc	Power dissipation @ Ic	W	232	261	233	262
Fd	Max. detent force (average to peak)	N	0.0	0.0	0.0	0.0
Fa	Attraction force	N	0.00	0.00	0.00	0.00

MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	46.2	46.2	29.6	29.6
Ku	Back EMF constant (*)	Vrms/(m/s)	27.9	27.9	17.8	17.8
Km	Motor constant	N/√W	24.1	24.1	24.4	24.4
R20	Electrical resistance at 20°C (*)	Ohm	2.45	2.45	0.976	0.976
L	Electrical inductance (*)	mH	4.51	4.52	1.85	1.85
rth	Thermal time constant	s	1670	928	1680	941
Rth	Thermal resistance	K/W	0.475	0.420	0.473	0.419
2tp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	13.3	13.3	13.3	13.3
mm	Motor mass	kg	1.50	2.09	1.52	2.11

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.25	0.25	0.25	0.25
x	Assumed stroke	m	1.1	1.1	1.1	1.1
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	66	N/A	66
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.8	N/A	0.8

Notes: (*) terminal to terminal.
Hypotheses and tolerances are in ETEL Integration Manual.

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MOTOR PERFORMANCE		Winding codes	PD	PD	RD	RD
		UNIT	FREE AIR COOLING	FORCED AIR COOLING	FREE AIR COOLING	FORCED AIR COOLING
Fp	Peak force	N	3150	3150	3200	3200
Fc	Continuous force	N	440	470	447	478
Fs	Standstill force	N	333	355	338	361
Ip	Peak current	Arms	44.7	44.7	71.1	71.1
Ic	Continuous current	Arms	6.19	6.61	9.84	10.5
Is	Standstill current	Arms	4.69	4.99	7.44	7.93
vs	Rated low speed	mm/s	0.36	0.67	0.36	0.66
Pc	Power dissipation @ Ic	W	276	312	277	313
Fd	Max. detent force (average to peak)	N	0.0	0.0	0.0	0.0
Fa	Attraction force	N	0.00	0.00	0.00	0.00

MOTOR SETTING		UNIT				
Kt	Force constant	N/Arms	73.9	73.9	47.3	47.3
Ku	Back EMF constant (*)	Vrms/(m/s)	44.4	44.4	28.4	28.4
Km	Motor constant	N/√W	32.9	32.9	33.4	33.4
R20	Electrical resistance at 20°C (*)	Ohm	3.36	3.36	1.34	1.34
L	Electrical inductance (*)	mH	7.31	7.31	2.99	2.99
rth	Thermal time constant	s	1760	960	1770	976
Rth	Thermal resistance	K/W	0.399	0.351	0.398	0.350
2tp	Magnetic period	mm	64	64	64	64
mw	Magnetic way mass	kg/m	22.7	22.7	22.7	22.7
mm	Motor mass	kg	1.98	2.57	2.00	2.59

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Ss	Stator exchange surface	m²	0.32	0.32	0.32	0.32
x	Assumed stroke	m	1.1	1.1	1.1	1.1
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θa	Inlet air temperature	°C	N/A	20	N/A	20
qa	Minimum air flow	l/min	N/A	66	N/A	66
Δpa	Minimum inlet air gauge pressure	bar	N/A	0.8	N/A	0.8

Notes: (*) terminal to terminal.

Hypotheses and tolerances are in ETEL Integration Manual.

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